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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,056	09/25/2003	Daniel Alan Brokenshire	AUS920030701US1	5833

40412 7590 02/07/2007

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EXAMINER	
WEI, ZHENG	
ART UNIT	**PAPER NUMBER**
2192	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/671,056	BROKENSHIRE ET AL.	
	Examiner	Art Unit	
	Zheng Wei	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :9/25/03,11/11/05,5/16/06,8/15/06,9/19/06,10/15/06
01/04/07.

DETAILED ACTION

1. This office action is in response to the application filed on 09/25/2003.

2. Claims 1-20 are pending and have been examined.

Oath/Declaration

3. The Office acknowledges receipt of a properly signed oath/declaration filed on September 25, 2003.

Priority

4. The priority date considered for this application is September 25, 2003.

Information Disclosure Statement

5. The information disclosure statements filed 09/25/2003, 11/11/2005, 05/16/2006, 08/15/2006, 09/19/2006, 10/15/2006 and 01/04/2007 have been placed in the application file and the information referred to therein has been considered.

Drawings

6. The drawings filed on September 25, 2003 are accepted by the Examiner.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Stallman (Richard M. Stallman, Using and Porting he GNU Compiler Collection for GCC3.1).

Claim 1:

Stallman discloses a method for compiling source code for a plurality of heterogeneous processor types, said method comprising:

- receiving source code (see for example, p.3, lines 3-5, "Several versions of the compiler (C, C++, Objective-C, Fortran, Java) and CHILL are integrated ; this is why we use the name 'GUN Compiler Collection'. GCC can compile programs written in any of these languages");
- selecting a processor type from the plurality of heterogeneous processor types (see for example, p.10-16, a list of machine dependent options for different processor types, e.g., p.12 lines 43-46, a set of option can be selected for MIPS processor); and
- creating an object file that corresponds to the source code, wherein the object file is adapted to be processed by the selected processor type (see for

example, p.7, lines 4-5, "Then the output consists of object files output by the assembler).

Claim 2:

Stallman further discloses the method as described in claim 1 wherein the source code includes a plurality of source code subtasks and wherein the selecting is performed for each of the plurality of source code subtasks (see for example, p.75, section 3.17 Hardware Models and Configurations, "A single installed version of the compiler can compile for any model or configuration, according to the options specified.").

Claim 3:

Stallman discloses the method as described in claim 2 above and also discloses but does not explicitly discloses wherein the selecting is performed during compilation, the method further comprising:

- retrieving one of the source code subtasks from the plurality of source code subtasks (see for example, p.15, Section Options Controlling the Kind of Output "Compilation can involve up to four stages: preprocessing, compilation proper, assembly and linking, always in that order");
- determining whether the source code subtask includes a program directive corresponding to one of the plurality of processors (see for example, p.75, section 3.17, lines 17-19, "These options are defined by the macro

TARGET_SWITCHES in the machine description. The default for the options is also defined by that macro, which enables you to change the defaults." also see p.425-426, Section 21.3, Run-time Target Specification, detail description of TARGET_SWITCHES and example); and

- performing the selecting in response to the determination (see for example, p.75, section 3.17 Hardware Models and Configurations, "A single installed version of the compiler can compile for any model or configuration, according to the options specified").

Claim 4:

Stallman also discloses the method as described in claim 2 further comprising:

- retrieving one of the source code subtasks from the plurality of source code subtasks (see for example p.269, section 17 Passes and Files of the Compiler; lines 20-22, "Parsing, This pass reads the entire text of a function definition...") and
- compiling the retrieved source code subtask, the compiling resulting in byte code (see for example, p.3, section 1, Compile C, C++, Objective-C, Fortran, Java or CHILL, "Several versions of the compiler (C, C++, Objective-C, Fortran, Java and CHILL) are integrated").

Claim 7:

The method as described in claim 1 further comprising:

- receiving a processor-specific command, the processor specific command (see for example, p.75, section 3.17 Hardware Models and Configurations, lines 11-14, "In addition, each of these target machine types can have its own special options, starting with '-m' to choose among various hardware models or configurations – for example, 68010 vs 68020...")
- identifying a processor type from the plurality of heterogeneous processor types (see for example, p.10-16, a list of machine dependent options for different processor types, e.g., p.12 lines 43-46, a set of option can be selected for MIPS processor); and
- performing the selecting based upon the processor-specific command (see for example, p.75, section 3.17 Hardware Models and Configurations, "A single installed version of the compiler can compile for any model or configuration, according to the options specified.").

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stallman (Richard M. Stallman, Using the GNU Compiler Collection for GCC3.1)

Claim 5:

Stallman discloses the method as described in claim 4, but does not disclose said method further comprising: sending the byte code to a client over a computer network, wherein the byte code is adapted to be translated into client-specific object code by the client whereby the client-specific object code is formatted based upon a processor type that is located at the client. However, it is well known in the computer art at the time the invention was made that said byte code, as a type of computer program code can be sent and/or retrieved over computer network using any transmission protocols, e.g., TCP/IP. It is also well known in the computer art that byte code can be interpreted and executed at client machine by using client's Just-In-Time compiler to translated into client specific object code. Therefore, claim 5 is unpatentable over Stallman and well-known feature discussed above.

11. Claims 6, 8-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stallman (Richard M. Stallman, Using the GNU Compiler Collection for GCC3.1) in view of Ansari (Ansari et al., US 6,473,897)

Claim 6:

Stallman discloses the method as described in claim 2 comprising: retrieving one of the source code subtasks from the plurality of source code subtasks (see for example p.269, section 17 Passes and Files of the Compiler; lines 20-22, "Parsing, This pass reads the entire text of a function definition...") and manually

defines compile option for processor types in macro (see for example, p.10-16, a list of machine dependent options for different processor types, e.g., p.12 lines 43-46, a set of option can be selected for MIPS processor), but does not disclose identifying the operations in source code , matching and performing the selecting in response to the matching. However, Ansari in the same analogous art about generating multiple processor-specific code segments in a single executable discloses:

- identifying one or more operations included in the retrieved source code subtask (see for example, Fig.8, step 805, "For Each Source Code File Analyze The File Function By Function" and related text;)
- matching one or more of the operations with one of the processor types from the plurality of heterogeneous processor types (see for example, Fig.8, step 810, "Is There A performance Advantage In Customizing A source Code Function To a Particular Processor Type?" and related text); and
- performing the selecting in response to the matching (see for example, Fig.8, step 820, "Compile CPU-Specific Optimized Version(s) of Function" and related text).

Therefore, it would have been obvious to one having ordinary skills in the art at the time the invention was made to integrate Ansari's method in Stallman's compilation process to generate different object code optimized for different processors according to source code subtask operation (function or performance). One would have been motivated to do so to enables independent

software vendors (ISVs) to take advantage of different high performance instructions available on different types of processors while simultaneously allowing them to generate applications that can be executed on several types of processors as once suggested by Ansari. (see col.15, lines 51-57 for the motivation described above)

Claims 8-13:

Claims 8-13 are system version for performing the claimed method as in claims 1-6 addressed above, wherein all claimed limitation functions have been addressed and/or set forth above and certainly a computer system would need to run and/or practice such function steps disclosed by Stallman and Ansari. Thus, they also would have been obvious.

Claims 14-20:

Claims 14-20 are computer program products version of the claimed method, wherein all claimed limitation functions have been addressed in claims 1-7 above respectively. It is well known in the computer art that such method steps can be implemented as computer program and can be practiced and /or stored on a computer operable media. Thus, they also would have been obvious in view of Stallman and Ansari's teachings.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zheng Wei whose telephone number is (571) 270-1059. The examiner can normally be reached on Monday-Thursday 8:00-15:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature of relating to the status of this application or proceeding should be directed to the TC 2100 Group receptionist whose telephone number is 571- 272-1000.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ZW

TUAN DAM
SUPERVISORY PATENT EXAMINER